Ground Support Equipment (GSE)

Final Documentation

May 2018

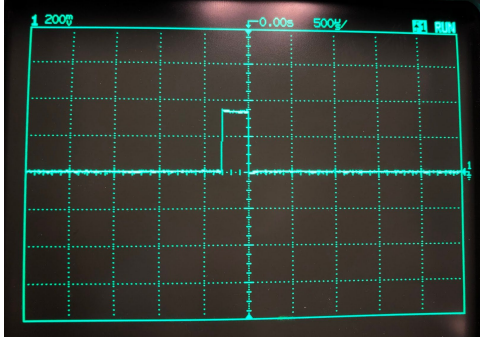|	Expected Output
RS-232	Space, the final frontier. These are the voyages of the Starship Enterprise. Its continuing mission to explore strange new worlds, to seek out new life and new civilization, to boldly go where no one has gone before…
Parallel (Pins 11-16, 20-29)	Labview capture - on-screen on/off sequence
Analog (Pins 1-10)	Labview capture - square waves of different size for each pin
Power	Labview capture - LEDs visible from component box 36V (max voltage) = max brightness LEDs become dimmer as less voltage is passed

Contact Information

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User Guide

Expected Outputs

RS232

"Space, the final frontier.

These are the voyages of the Starship Enterprise.

Its continuing mission to explore strange new worlds,

to seek out new life and new civilization,
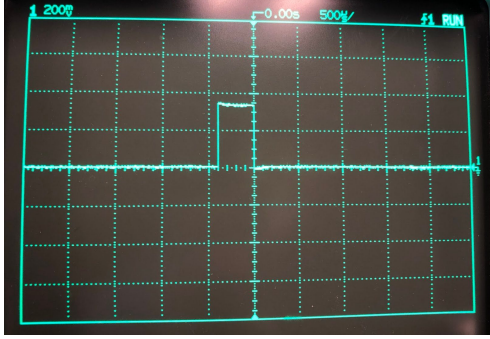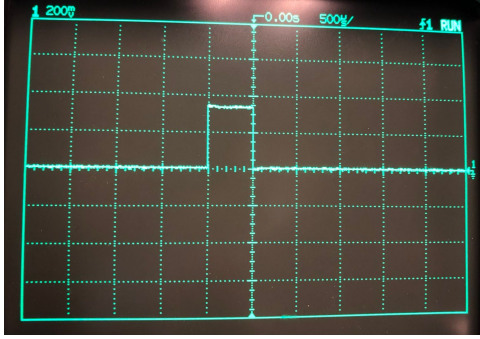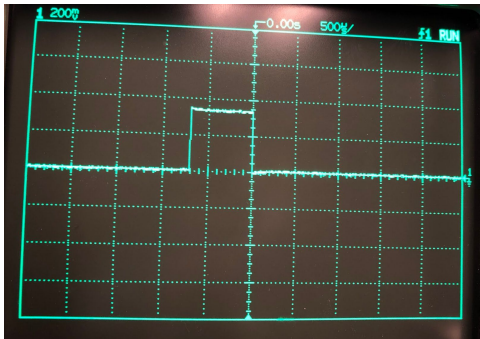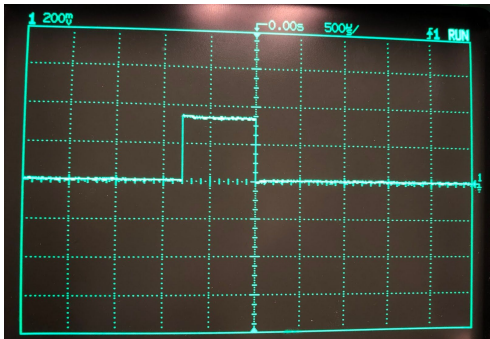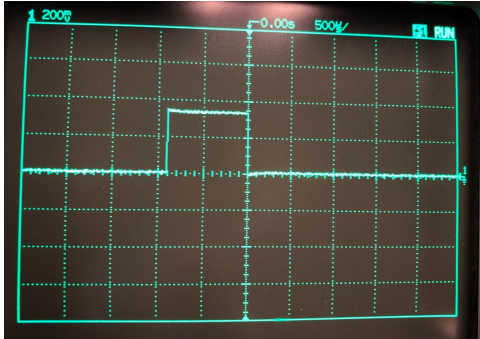
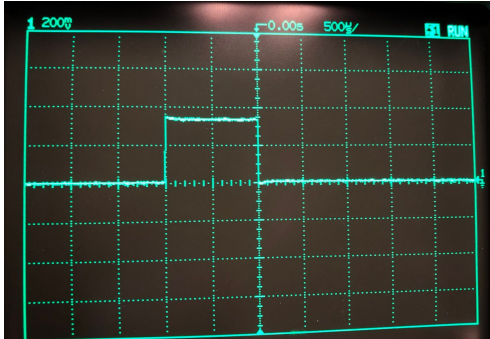to boldly go where no one has gone before…"
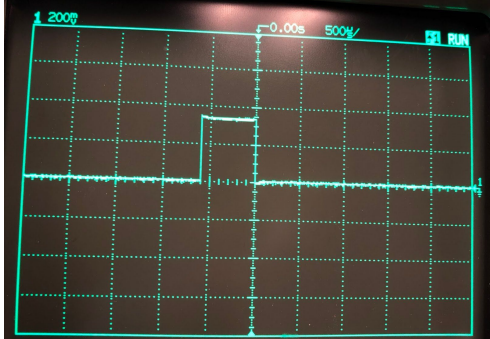
Parallel

Labview capture, on screen, on/off sequence of LEDS (illuminating from left to right, one by one, darken from right to left)

Analog

Labview capture, on screen square waves of different size for each pin

Pin 1		Pin 2	
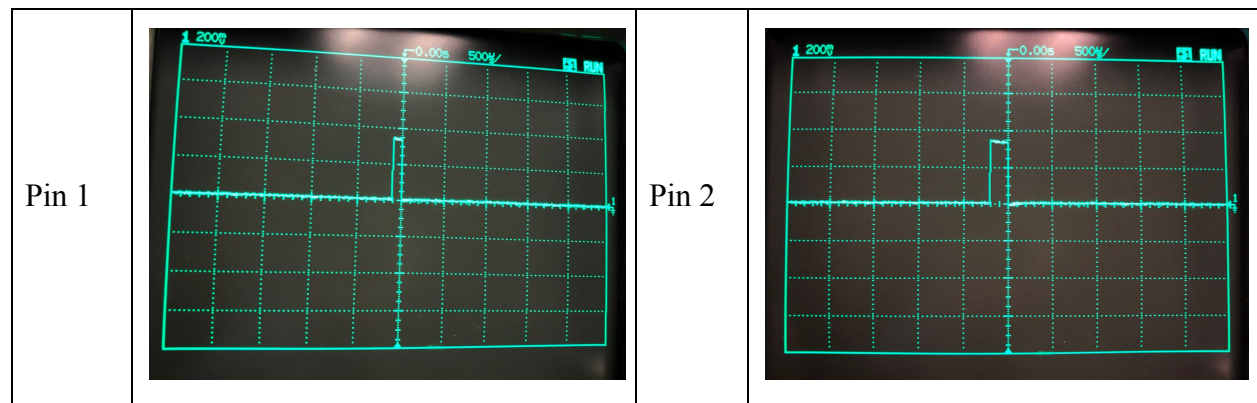
Pin 3		Pin 4	
Pin 5		Pin 6	
Pin 7		Pin 8	
Pin 9		Pin 10	

Power

Labview capture, LEDs visible from component box

Materials Used

Arduino Due

https://store.arduino.cc/usa/arduino-due

37 Pin Female Connector

https://www.amazon.com/uxcell-37-Pin-Female-Connector-Adapter/dp/B00X73KKAM

15 Pin Male Connector

https://www.amazon.com/Pc-Accessories-Connectors-Connector-20-Pack/dp/B014W0U
QOS/ref=sr_1_5?ie=UTF8&qid=1525796601&sr=8-5&keywords=15+pin+connector+%
5C

7 - 1000 ohm resistor

https://www.amazon.com/Watt-Carbon-Film-Resistors-pack/dp/B00EV2QC96

7 - 2.4k Ohms Resistor

https://www.jameco.com/z/CF1-4W242JRC-Resistor-Carbon-Film-2-4k-Ohm-1-4-Watt-
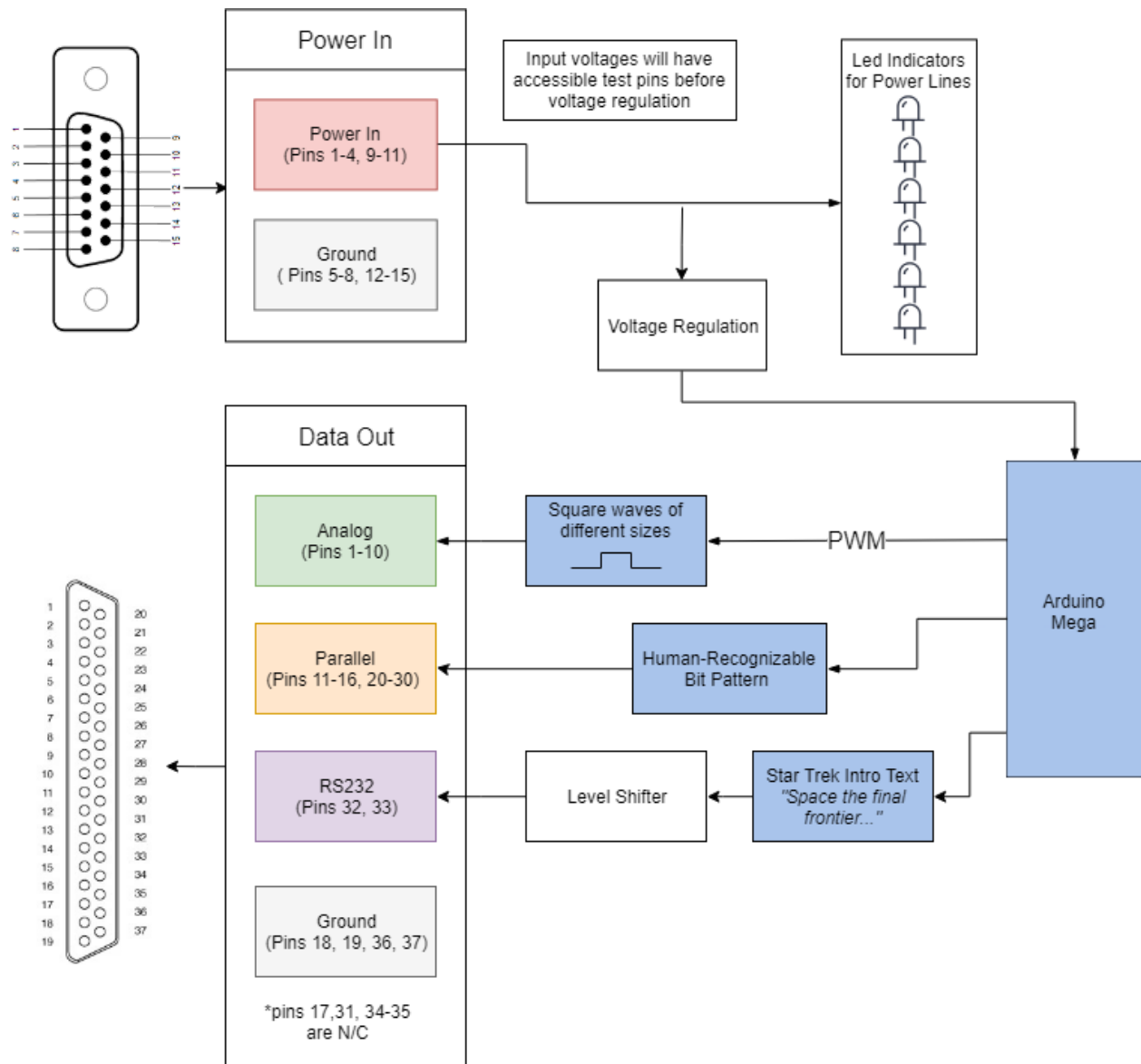5-Bag-of-100-_690953.html

RS232 Connector

https://www.sparkfun.com/products/449

1120 Pelican Case

http://www.pelican.com/us/en/product/cases/protector/1120

Double Sided PCB Board

https://www.amazon.com/Double-Sided-Board-Prototype-Paxcoo/dp/B01N3161JP

7 - LED's

https://www.amazon.com/Elenco-Electronics-LEDK-80-LED-Component/dp/B005GL9E
NC

Functional Block Diagram

[GSE Functional Block Diagram](#)

[Circuit Schematics](#)

Code

https://github.com/Colorado-Space-Grant-Consortium/ATeam-2017-CU/tree/master/A-Team/RocketSat%20GSE

Troubleshooting

If the parallel is not working

      Use LEDs on a breadboard to test output

If the analog is not working

      Use an oscilloscope to check outputs